policy perspectives

# Why Do We Have a KNOWLEDGE DEFICIT?

by E. D. Hirsch, Jr.

*I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas.... Soon or late, it is ideas, not vested interests, which are dangerous for good or evil.*

— J. M. Keynes, *The General Theory of Employment, Interest, and Money* (1936)

## The Achievement Crisis

The American public sees that something is badly amiss in the education of our young people. Employers now often need to rely on people from other countries to do the math that our own high school graduates cannot do. We score low among developed nations in international comparisons of science, math, and reading. This news is in fact more alarming than most people realize, since our students perform relatively worse on international comparisons the longer they stay in our schools. America's fourth graders score ninth in reading among 35 countries, which is respectable. By tenth grade they score 15th in reading among 27 countries, which is not promising at all for their (and our) economic future.[1] A person's and a nation's economic success depend on high reading and/or math ability. We have learned from the phenomenon of outsourcing that those who have these abilities can find a place in the global economy no matter where they happen to live, while those who lack them can be marginalized even if they live in the middle of the United States.

Reading ability is the heart of the matter because it correlates with learning and communication ability across subjects. Reading proficiency isn't in and of itself the magic key to competence. It's what reading enables us to learn and to do that is critical. Given current and rapidly growing uses of technology in daily life and in many jobs, the key to economic and political achievement is the ability to gain new knowledge rapidly through reading and listening.

READING PROFICIENCY ISN'T THE MAGIC KEY TO COMPETENCE: IT IS WHAT READING ENABLES US TO LEARN AND TO DO THAT IS CRITICAL.

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Students' scores in reading comprehension are consistently associated with their subsequent school grades and their later economic success. A second grader's reading ability reliably predicts that child's academic performance in eleventh grade, quite irrespective of his or her native talent and diligence.[2] Long-range studies show that if children become skilled readers, the United States offers them a fair chance in life — probably more so than any other nation.[3] But that is a big if. Becoming a skilled reader — a skilled user of language — is not fast or easy. If it were, our schools would be enabling all our students to reach this goal, when in fact they are bringing fewer than half of them to reading proficiency.

Verbal SAT scores in the United States took a nosedive in the 1960s, and since then they have remained flat. Despite intense efforts by schools, reading scores nationwide have remained low. Equally worrisome is the continuing large reading gap among demographic groups. The average reading scores of Hispanics have hovered some twenty-five points below that of whites, while scores of Blacks are nearly thirty points below that of whites. While much of the origins of the discrepancy lie outside school, in the language that toddlers hear, we have not been able to narrow that early gap, but instead have allowed it to widen as students move through the grades.[4]

Whites cannot read well either. More than half of them — some 59 percent — do not read at a proficient level. For Hispanics, it is a depressing 85 percent, and for Blacks it is a tragic 88 percent.[5] Reading ability correlates with almost everything that a democratic education aims to provide, including the ability to be an informed citizen who can actively participate in the self-government of a democracy. What gives the reading gap among demographic groups a special poignancy is the dramatic failure of our schools to live up to the basic ideal of a democratic education, which, as Thomas Jefferson conceived it, is the ideal of offering all children the opportunity to succeed, regardless of who their parents happen to be. Reading proficiency is at the very heart of the democratic educational enterprise, and is rightly called the "new civil rights frontier."[6]

## The Curse of Romantic Ideas

The reason for this state of affairs is that an army of American educators and reading experts are fundamentally wrong in their ideas about education and especially about reading comprehension. Their well-intentioned yet mistaken views are the significant reason (more than other constantly blamed factors, even poverty) that many of our children are not attaining reading proficiency, thus hindering their later schooling. An understanding of how these mistaken ideas arose may help us to overcome them.

When I began college teaching in the 1950s, my academic specialty was the history of ideas. I also specialized in the theory of textual interpretation, which, reduced to its essence, is the theory of reading. So I became well-versed in the scientific literature on language comprehension and in American and British intellectual history of the nineteenth century. This double research interest prepared my mind for disturbing insights about American schooling. I saw that John Maynard Keynes' remark about the power of ideas over vested interests that I have used as an epigraph was profoundly right. Root ideas are much more important in practical affairs than we usually realize, especially when they are so much taken for granted that they are hidden from our view.

Our nation was born in the Enlightenment but bred in the Romantic period. Today we most often use the term romantic to refer to romantic love. But romanticism as a broad intellectual movement that has greatly influenced American thought has much less to do with romantic love than with a complacent faith in the benefits of nature. Such faith was the aspect of nineteenth-century ideas that powerfully influenced our young nation in its beginnings, and it still dominates our thinking about education and many other things.

Consider the idea that school learning, including reading, is or should be natural. The word natural has been a term of honor in our country ever since our forebears elevated "nature" and "natural" to a status that had earlier been occupied by divine law. Following the Colonial period, during the heady days of the early 1800s, the most influential thinkers in New England were no longer writers like Jonathan Edwards, who had exhorted us to follow the commandments of God's law, but writers like Emerson and Thoreau, who admonished us to develop ourselves according to nature. That was a hugely important shift in our mental orientation. Vernon Parrington titled the second volume of his massive intellectual history of the United States, *The Romantic*

> The knowledge deficit is a failure of social justice (and) the consequence of good intentions serving inadequate ideas.

*Revolution in America, 1800–1860*, and his use of the term revolution accurately estimates the fundamental change that took place in the American attitude to nature and to education.[7]

Horace Mann is justly praised as the father of public education in the United States, and he rightly saw the need for our schools to bring all children, including recent immigrants, into the main stream of American life. But romantic ideas, especially the idea that nature is best, influenced his belief that the best way to teach early reading — sounding out words from the printed page — is a "natural," whole-word approach.[8] The most important American thinkers of the nineteenth and early twentieth centuries, those who formed our current ways of approaching education and many other matters, believed that the natural cannot lead us astray.

Within the writings of John Dewey beats the heart of a romantic, as indicated by his continual use of the terms development and growth with regard to the schooling of children — terms that came as naturally to him as they still do to us. In fact, they come to us so unbidden that we do not even notice the fact that conceiving of education as "growth" on the analogy of a bush or tree is in many cases highly questionable, and is made to seem plausible only because children do indeed develop naturally, both physically and mentally, during the early years of schooling.[9] Being trained in the history of ideas, I had become familiar with the way in which unnoticed metaphors like "growth" and "development" unconsciously govern our thought — and continue to do so, even when scientific evidence clearly shows that reading and doing math are not natural developments at all.

My academic specialties thus freed me to think in new ways about what had gone wrong in our schools and to write my 1987 book, *Cultural Literacy*, which became a surprise bestseller. Many classroom teachers and parents praised it as accurately describing the way in which knowledge-oriented teaching had vanished from the early grades. But coming at the height of fierce debates over multiculturalism and gender politics, it was met with great hostility by cultural reformers and education professors as a reactionary tract aimed at preserving the intellectual domination of white Anglo-Saxon males, and as a means of boring children with mindless drills and stuffing them with "mere facts."

Its main argument, that reading comprehension — literacy itself — depends on specific background knowledge, was overlooked in the cultural taking of sides. The atmosphere seems different today. The intensity of identity politics has diminished. Existing instructional practices have not been working. National mandatory testing, which prods schools to achieve "adequate yearly progress" in reading, has highlighted the bankruptcy of prevailing ideas. The public increasingly understands that the knowledge deficit is a profound failure of social justice. Less understood is the fact that this failure is the consequence of good intentions in the service of inadequate ideas.

## Should Schooling Be Natural?

The word nature has its root in the Latin word *natus* — birth, what organisms are born with. By the same token, the word development means an unfolding in time of what at birth we potentially contain. Yet the romantic concept of education as a natural unfolding — by far the most influential idea in the history of American education — has small basis in reality when it comes to reading, writing, and arithmetic. The notion that the job of the schools is to foster the natural development of the child is only a half-truth.[10]

Let's ponder "development" for a moment. When a fertilized egg turns into an embryo, that development is indeed something that unfolds naturally. Similarly, in the first two years of life, when a child learns to walk and talk, those are natural developments that are universal in all cultures. Since the child acquires these extremely difficult skills often without conscious adult instruction, we might mistakenly extend trust in natural unfolding to the next stage of life, when a child enters school. And indeed, that is what educators do when they delay teaching the mechanics of reading until a child reaches a state that is deemed to be a developmental stage of "reading readiness." Before that time, children are not to be interfered with by premature and artificial teaching of letter-sound correspondences because these are "developmentally inappropriate."

Extreme advocates of this viewpoint insist that children will learn to read as readily as they learned to talk. Similarly, the romantic complacency of American educational thought holds that children, given time, will develop a readiness to understand place value in arithmetic. The idea that children might naturally develop a readiness for either place value or the phonic code overlooks the glaring fact that we as a species might never have invented these things at all. Place value in base-ten arithmetic was a very unnatural invention of civilization that reached Europe even later than the alphabet did — not until around the fifteenth century.[11] Alphabetic writing was a brilliant, momentous invention, and it was equally unnatural. Scholars still debate whether alphabetic writing was invented only once in human history.[12]

If early childhood experts, liberated from the romantic traditions of American schools, had considered the matter from a historical or anthropological angle, they might have taken stock of the fact that reading is developmentally inappropriate at all ages of human life. There is little in the human organism that prepares us naturally for alphabetic reading and writing (decoding and encoding), which have been very late and rare attainments of civilization. The inherent unnaturalness of learning to read is part of the reason that it is at first so difficult and, for many, so painful.

## What About "Mere Facts"?

A naturalistic approach to teaching phonics, under the idea that children are somehow wired to master the alphabetic code, is not, however, the most deleterious influence of romantic ideas in hindering the effective teaching of reading. The word reading has two senses, often confusingly lumped together. The first means the process of turning printed marks into sounds and these sounds into words. But the second sense means the very different process of understanding those words. Learning how to read in the first sense — decoding through phonics — does not guarantee learning how to read in the second sense — comprehending the meaning of what is read. To become a good comprehender, a child needs a great deal of knowledge. A romantically inspired, long delay in teaching phonics, until children are supposedly developmentally ready, as regrettable as it is, is not nearly as permanently harmful to our students economically and socially as the other aspect of the romantic tradition in education — its knowledge-withholding, anti-intellectual aspect.

Disparagement of factual knowledge as found in books has been a strong current in American thought since the time of Emerson. Henry Ford's famous dictum, "History is bunk," is a succinct example. Since the nineteenth century, such anti-intellectualism has been as American as apple pie, as the great historian Richard Hofstadter has pointed out, and it came straight out of the Romantic movement into our schools.[13]

In our pre-romantic days, books were seen as the key to education. In a 1785 letter to his 15-year-old nephew, Peter Carr, Jefferson recommended that he read books (in the original languages) by authors including, but not limited to, Herodotus, Thucydides, Xenophon, Anabasis, Arian, Quintus Curtius Plato, Cicero, Homer, and Shakespeare.[14] Jefferson's plan of book learning was modest compared to the proper Puritan education of the seventeenth century as advocated by John Milton.[15] The Romantics rejected such advice. They opposed the reading of books as unnatural, as arising from the artificial habits and constraints of civilization.

Emerson claimed that the farm was a better teacher than the school: "We are shut up in schools and college recitation rooms for ten or fifteen years & come out at last with a bellyful of words & do not know a thing …The farm, the farm is the right school … The farm is a piece of the world, the School house is not."[16] John Dewey's Lab School, which he started in Chicago in 1896, was based on the conviction that children would learn what they needed by engaging in practical activities such as cooking.

A deficit of factual knowledge and language causes the fourth-grade slump so many children experience.

Today our schools and colleges of education, the inheritors of these ideas, are still the nerve centers of an anti-intellectual tradition. One of their most effective rhetorical tics is to identify the acquisition of broad knowledge with "rote learning" of "mere facts" — in subtle disparagement of "merely verbal" presentation in books and through the coherent explanations of teachers. Just like Rousseau, Wordsworth, and Dewey, our schools of education hold that unless school knowledge is connected to "real life" in a "hands-on" way, it is unnatural and dead; it is "rote" and "meaningless." It consists of "mere facts."

Nobody advocates rote learning of disconnected facts. Neither Milton nor Thomas Jefferson nor any of their more thoughtful contemporaries who championed book learning advocated rote learning. What they did advocate was the systematic acquisition of broad knowledge. And such knowledge is precisely what it takes to become a good reader. Our unwarranted faith in nature — in the idea that so essential and unnatural a skill as decoding will occur mainly through natural development, or that needed knowledge will be imbibed naturally through hands-on experience, plus our faith that how-to strategies will lead to reading competence — have led to the mistaken dogma that reading is a formal skill that can be transferred from one task to another regardless of subject matter.

The factual knowledge that is found in books is the key to reading comprehension. A deficit of factual knowledge and the deficit in language it entails are the causes of the so-called fourth-grade slump that many children experience.[17] For some time now, researchers have observed this phenomenon. Jane scores well in reading in grades one through three but surprisingly begins to score badly in grade four. That's not because Jane suddenly took a backward step. It's because in the early grades she was mainly learning how to decode the printed marks easily and fluently, as reflected in her rising test scores. But in grade four, when Jane was given more challenging content to read in class and on tests, her limited comprehension of language began to show. It was not her fault. Her comprehension problem had been there but had gone unrecognized and untreated in the earlier grades. By fourth grade it is very late to correct it — a tragedy, because this failure most seriously limits her progress in later elementary grades, in middle school, in high school, and in later life. Children who lag in comprehension in early grades tend to fall even further behind in later years.[18] For children to make substantial progress in reading, they must make early and substantial progress in knowledge.

## Is Knowing How Better Than Knowing What?

If "mere facts" do not matter as much to the romantics as "real-world" experiences, and if book learning and a "bellyful of words" are not essential to education, then what is essential to education? Professional educators had to find some answer to justify schooling at all (*pace* Emerson), and they found it in the notion that certain subjects, like reading and math, are all-purpose, formal skills that, once learned, can be applied to all subjects and problems. This answer was given not only by the Romantics in the nineteenth and early twentieth centuries but also by their successors in our education schools today — that how-to knowledge, skills that are universally applicable to all circumstances of life, is the important thing to be learned. The various schools of "progressive" educational thinkers have agreed on this point. A specific, factual curriculum, they hold, is not needed for gaining all-purpose cognitive skills and strategies.[19] Instead of burdening our minds with a lot of dead facts, we should become expert in solving problems, in thinking critically — in reading fluently — and then we will be able to learn anything we need.

## What students and teachers need is a revolution in ideas.

This idea, which I have called formalism, has a plausible sound to it. Its surface plausibility derives from the fact that a good education can indeed create skilled readers and critical thinkers. The mistake is to think that these achievements are the result of formal, all-purpose skills rather than abilities that are completely dependent on broad factual knowledge. While it is true that proficient reading and critical thinking are all-purpose abilities, they are not content-independent, formal skills at all but are always based on concrete, relevant knowledge and cannot be exercised apart from what psychologists call "domain-specific" knowledge. The only thing that transforms reading skill and critical thinking skill into general all-purpose abilities is a person's possession of general, all-purpose knowledge.[20]

Formalism in reading is the notion, powerfully dominant in our schools, that reading comprehension is a skill, like typing, that can be transferred from one text to another. Comprehension skill is said to depend on formal "comprehension strategies," such as "predicting, summarizing, questioning, and clarifying." This innocent-seeming idea affects classes all over the nation, depriving them of substance and intellectual structure.

In May 2004, a front-page story in the *Washington Post* described the activities in a third-grade classroom at a public school in Maryland, which the reporter, Linda Perlstein, identified as being typical of activities "across the nation."[21] Perlstein had been sitting in classrooms at the school, observing what went on and talking to students, teachers, and administrators.

The piece begins with 9-year-old Zulma Berrios's take on the school day:

> "In the morning we read. Then we go to Mrs. Witthaus and read. Then after lunch we read. Then we read some more."

These reading periods, Perlstein points out, come at the expense of classes in history, science, and art. The reading materials themselves are quite vapid. In this particular class, the children were reading a book about a grasshopper storm. But the point of the class was not to learn anything in depth about grasshoppers; the point was to learn how to ferret meaning out of a text by using formal "strategies."

> For 50 minutes, Tracey Witthaus pulls out a small group of third graders — including Zulma — for Soar to Success, an intensive reading-comprehension program used at many county schools. Instead of studying school desegregation and the anniversary of Brown v. Board of Education, Zulma's group finishes a book about a grasshopper storm and practices reading strategies: predict, summarize, question, clarify. "Clarify," said Zulma, who began the year reading at the late first-grade level. "When I come to a word I don't know, I look for chunks I do. Reminded. Re-mineded."
>
> "Clarify," said Zulma's classmate Erick Diaz, 9, who began the year reading at a second-grade level. "When I come to a word I don't know, I look for chunks I do. Hailstones. Hail-stone-s."

The theory behind these deadening activities is that learning comprehension strategies will give students a shortcut to gaining greater expertise in reading. Supposedly, learning such strategies will quickly provide the skills they need to comprehend unfamiliar texts. But as the teachers in the school pointed out to the reporter, the methods did not seem to be working. Reading scores were not going up significantly. Perlstein reports that "staff members said they aren't sure what they might be doing wrong."

It is not the school staff that is responsible for what is going wrong in the school but the incorrect ideas

that have been imposed on the staff — the formalistic theory behind these dull activities. That theory was succinctly stated by the district superintendent: "Once they learn the fundamentals of reading, writing, and math, they can pick up science and social studies on the double-quick. You're not going to be a scientist if you can't read."

The idea that reading skill is largely a set of general-purpose maneuvers that can be applied to any and all texts is one of the main barriers to our students' achievement in reading. It leads to activities that are deadening for agile and eager minds, and it carries big opportunity costs. These activities actually slow down the acquisition of true reading skill. They take up time that could be devoted to gaining general knowledge, which is the central requisite for high reading skill. The staff at the school Perlstein visited is dutifully wasting large amounts of valuable time by following the mistaken advice put forth by reading experts and by various "research-based" reading comprehension programs currently on offer. What these students and their teachers mainly need is a revolution in ideas.

## Is Society to Blame?

The failure of romantic ideas to improve educational achievement is an inevitable result of their scientific inadequacy and inaccuracy. Reading is not, as romantics hold, either a natural acquisition or a formal skill. But mere scientific inadequacy can be a practical irrelevance in American education. Professors, including those who teach our teachers, do not easily give up their long-asserted ideas, even under the pressure of unfavorable scientific evidence. As Max Planck once memorably observed, new ideas take hold only when the old professors retire or die.[22] If the professors continue to think that romantic educational ideas are not scientifically wrong at all but quite correct, then they must find some other cause to explain why our students are not learning to read well. This alternative cause is American society — its distractions and its inequities. Under this theory, even students from advantaged circumstances do not learn to read well because of the distractions of modern culture — video games, computers, television, the movies. But that part of the theory is readily disposed of by pointing to developed countries whose students read better than ours yet spend as much or more time on video games, computers, television, and the movies.[23]

The more significant part of the blame-society theory is the claim that social conditions necessarily keep poor Blacks and Hispanics from reading well. This is the theory of demographic determinism, which holds that reading problems have their roots outside school, in economic and cultural conditions (which is initially true). But the theory then goes on to claim (falsely) that low test scores in reading are beyond the power of schools by themselves to overcome. The familiar argument runs this way: Since the schools can't remove poverty, it's unfair to suggest that they can bring everyone to proficiency in reading. It is poverty that causes low reading scores. Only after greater social justice is attained can we make real gains in those scores. The most eloquent defender of this view is Richard Rothstein, a former educational columnist for the *New York Times*. Rothstein argues that blaming the achievement gap mostly on failing schools is a mistake because it diverts attention from the need to improve the economic and social gaps among children that thwart academic potential long before school starts.[24]

I completely concur with the desire to gain greater equality of social circumstance for all children. But that pressing social goal does not have to be used as a distraction from our schools' failure to make a dent in the reading achievement gap among demographic groups. It does no practical good to attack the economic status quo by defending the educational status quo. If schools by themselves can do a far better job of narrowing the achievement gap in reading, that will be a supreme contribution to the social aims that Rothstein and many others desire.

The proof that schools can narrow the gap is that some have in fact done so, both in this country and elsewhere. But until more progress in narrowing the reading comprehension gap among social groups is achieved by many, many more American schools, demographic determinism will continue to seem plausible. It is nonetheless a flawed and dismal theory, which, while conveniently exculpating the schools, undermines the founding principle of democratic education. Rothstein and others who hold to the idea of demographic determinism might gladly abandon that view if our schools were able to make significant inroads into the current iron connection between reading scores and demographics.

## Making Better Ideas Prevail

To those who argue that the solution to overcoming poor educational outcomes lies in hiring better teachers, I respond that much of the talk about low teacher quality is misplaced. If teachers now lack the knowledge they need to teach reading and other subjects well, it is not because they are innately incompetent but because they have been trained under faulty romantic ideas about the nature of reading and the worthlessness of "mere information." Nor are the education professors who trained them natively incompetent. They, too, have been trained under faulty romantic ideas.

When I say that current external conditions are adequate for making a big improvement in reading, I have in mind, for one thing, the classroom time now being allocated to the subject. States, districts, and schools are devoting plenty of time to it. Georgia and other states have mandated that 90 minutes each day shall be spent on reading in grades one through three. New York City and California have mandated 150 minutes. The state of Arizona suggests that schools may wish to spend 180 minutes a day on reading. Clearly these time allocations would be quite adequate to effect improvements if the classroom time were being well spent.

Just as the time currently spent on reading instruction is sufficient for real progress, so instructional materials for reading are also more than sufficient, at least in bulk, for sponsoring a big improvement in reading scores.

Although the editors of several of these programs have strong credentials in education or psychology, the programs are far from up-to-date with regard to the relevant consensus in cognitive science. For instance, none of them fully reflects the current scientific consensus about the knowledge basis of reading. Cognitive scientists agree that reading comprehension requires prior "domain-specific" knowledge about the things that a text refers to, and that understanding the text consists of integrating this prior knowledge with the words in order to form a "situation model."[25] Constructing this mental situation model is what reading comprehension is. Existing reading programs, while they may pay lip service to this finding about the need for relevant background knowledge, fail systematically to exploit this fundamental insight into the nature of reading.

The reading problem can be solved if our schools begin to follow alternative ideas that stress the importance of a gradual acquisition of broad, enabling knowledge. We need to help create a public demand for the kind of knowledge-oriented reading program that is needed. If that demand arises, then the rest can safely be left to the cunning of the market, for most of us in the United States desire the same democratic goal — to give all children an opportunity to succeed that depends mainly on their own talents and character and not on who their parents happen to be. We also need to encourage an early curriculum that is oriented to knowledge rather than the will-o'-the-wisps of general, formal skills.

My call for a revolution in the teaching of subjects related to reading is issued in a period when activities in the elementary grades of the public schools are overshadowed by the provisions of the No Child Left Behind (NCLB) Act. Because of the exigencies of this law, the time could be ripe for making better ideas prevail.

Most citizens support the goals of NCLB. But support for the law has begun to diminish because it has proved immensely difficult for the schools to fulfill its key requirement that all demographic groups must make "adequate yearly progress" for the schools to qualify for a large annual sum from the federal government — a share of some $12 billion. Since many schools have found it nearly impossible to show adequate yearly progress in reading for all groups, even when subjects like history and science are being neglected to spend more time on reading, there has been an outcry against the act, and also against the yearly tests that measure progress. The U.S. Department of Education has been compelled to soften its requirements.

No situation better illustrates the importance of theories in education than this practical impasse. The legislation was enacted on the theory that if many children are being left behind in reading and if there is a large reading gap among demographic groups, the schools must not be concentrating their efforts properly on those needy children; hence we will build into the act incentives that will induce the schools to focus their efforts more equitably, so that these children will begin to catch up. Note that this theory assumes that the education world actually knows how to improve reading scores for all groups and that incentives must be applied because the schools are simply not putting forth the effort needed to help low-income and minority children.

We must encourage curricula oriented to knowledge.

Since no school wants to be labeled inadequate, the law's provisions have had a tremendous impact on the public schools, well-documented in Linda Perlstein's description of the Highland Elementary School in Maryland. Like that school, most schools seem to be trying as hard as they can. They were already instituting many of the reforms that are called for. That is, they have called in outside experts; they have used new curricula in the form of intensive reading programs; they have decreased management authority at the school level; and some districts have entered into contracts with private companies to operate schools that are not making adequate yearly progress.

With all this intensive NCLB activity, we might expect a significant change in reading achievement, and gains have indeed been made in the earliest grades, when sounding out (rather than comprehension) is chiefly being tested. But schools are having great difficulty meeting adequate-yearly-progress requirements, and it is unlikely that we will begin to see significant reading improvement in the next year or so, except for improvements in the teaching of sounding out — of phonics. But the credit for that improvement should go to the heroes of the systematic phonics movement, who through their efforts have now brought effective teaching of decoding into many reading programs. This improvement was due to a change of ideas, not to a system of incentives in the new law. However, for schools to make real improvements in reading comprehension similar to the improvements in sounding out, they will need better ideas.

By no means should these observations be taken as fundamental criticisms of NCLB and its important aims. It is the most hopeful and important federal education legislation that has been enacted in recent years. The legislators who passed the law can hardly be faulted for assuming that American educational experts possess enough scientific and practical knowledge to attain the goals of the act, so long as the act offered sufficient carrots and sticks. They were right about the inducements. They were wrong about the experts.

The fate of NCLB and of academic improvement will be decided in the sphere of ideas. American education school ideas march under the banner of continual reform, but the reform, given different names in different eras, is always the same one, being carried out against the same enemy. The enemy is dull, soulless drill and the stuffing of children's minds with dead, inert information. These are to be replaced by natural, engaging activities (naturalism). A lot of dead information is to be replaced by all-purpose, how-to knowledge (formalism). These are the two perennial ideas of the American educational world. These two principles together constitute a kind of theology that is drilled into prospective teachers like a catechism.

In practice the two principles are not always consistent with each other. Adhering to the formalistic idea — the how-to notion of reading comprehension that stresses clarifying, summarizing, questioning — will inevitably lead to drill-like activities, which will be anathematized by the naturalistic principle that learning should be an engaging activity. This inherent conflict leads in turn to resentment of the idea that the children should be constantly tested, since the new accountability provisions of NCLB, it is thought, have forced schools to engage in all of this soul-killing drill in clarifying and summarizing. That naturalism and formalism should inevitably be in conflict doesn't, however, mean that either is to be given up as part of the theology that is taught to teachers in our education schools. The internal conflict between the principles simply generates the need for continual reform, and offers an enemy that is always to be resisted, even when it has been generated by the drills that go with formalistic ideas.

The dominant principles of naturalism and formalism, being opposed to the systematic teaching of a great deal

of information, are deadly enemies of the reading goals of NCLB. Advances in reading will depend on students gaining a great deal of information. This conflict of ideas is, then, the root cause of the impasse between NCLB and the schools, for the only way to improve scores in reading comprehension and to narrow the reading gap among groups is systematically to provide children with the wide-ranging, specific background knowledge they need to comprehend what they read.

## Endnotes

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3. William R. Johnson and Derek Neal, "Basic Skills and the Black-White Earnings Gap," in Christopher Jencks and Meredith Phillips, eds., *The Black-White Test Score Gap* (Washington, DC: Brookings Institution, 1998), 480–97.

4. Betty Hart and Todd R. Risley, *Meaningful Differences in the Everyday Experience of Young American Children* (Baltimore: Peter Brookes, 1995).

5. National Center for Education Statistics Educational Resources Information, *National Assessment of Educational Progress (NAEP), Reading Assessments*(Washington, DC: U.S. Dept. of Education, 1998 and 2002). I received the welcome news of an improvement by nine-year-olds, both in overall reading proficiency and in narrowing the gap between groups, but there has been no improvement in the later grades, when reading comprehension rather than decoding becomes the more important element. This is the usual pattern. Needless to say, the real result of our education — how well our middle school and high school graduates comprehend what they read — is the critical test of our schooling. See http://nces.ed.gov/nations reportcard/ltt/results2004/ and Nick Anderson, "Schools Shift Approach as Adolescent Readers Fail to Improve," *Washington Post*, 1 August 2005, p. B1.

6. E.D. Hirsch, *The Schools We Need and Why We Don't Have Them* (New York: Doubleday, 1996), 43.

7. Vernon Louis Parrington, *Main Currents in American Thought: An Interpretation of American Literature from the Beginnings to 1920* (New York: Harcourt, Brace, 1927–1931).

8. Horace Mann, *Seventh Annual Report, 1843, in Report Together with the Report of the Secretary of the Board, 1st–12th* (Boston: Dalton, 1838–1849).

9. That is not to say that the word development has no proper place at all in our thinking about education. In the very early years, when the brain is still maturing physiologically, there is a nearly universal sequence of learning. Perhaps the best recent book about the appropriate limits of the development idea in early childhood learning is Robert Siegler, *Emerging Minds: The Process of Change in Children's Thinking* (New York: Oxford University Press, 1998). See also R. Siegler and M. W. Alibali, *Children's Thinking* (New York: Prentice-Hall, 2005).

10. For the half that is true, see Siegler, *Emerging Minds*, and Siegler and Alibali, *Children's Thinking.*

11. Eric T. Bell, *The Development of Mathematics* (New York: McGraw-Hill, 1940) and David M. Burton, *The History of Mathematics: An Introduction* (Boston: Allyn & Bacon, 1985).

12. John Noble Wilford, "Who Began Writing? Many Theories, Few Answers," *New York Times*, 6 April 1999, and David Sacks, *Letter Perfect: The Marvelous History of Our Alphabet from A to Z* (New York: Broadway, 2004).

13. Richard Hofstadter, *Anti-Intellectualism in American Life* (New York: Vintage Books, 1963).

14. Adrienne Koch and William Peden, eds., *The Life and Selected Writings of Thomas Jefferson* (New York: Modern Library, 1944).

15. "Next to make them expert in the usefullest points of Grammar, and withall to season them, and win them early to the love of vertue and true labour, ere any flattering seducement, or vain principle seise them wandering, some easie and delightful Book of Education would be read to them; whereof the Greeks have store, as Cebes, Plutarch, and other Socratic discourses. But in Latin we have none of classic authority extant, except the two or three first Books of Quintilian, and some select pieces elsewhere. But here the main skill and groundwork will be, to temper them such Lectures and Explanations upon every opportunity, as may lead and draw them in willing obedience, enflam'd with the study of Learning, and the admiration of Vertue; … At the same time, some other hour of the day, might

be taught them the rules of Arithmetick, and soon after the Elements of Geometry even playing, as the old manner was. After evening repast, till bed-time their thoughts will be best taken up in the easie grounds of Religion, and the story of Scripture. The next step would be to the Authors of Agriculture, Cato, Varro, and Columella, for the matter is most easie, and if the language be difficult, so much the better, it is not a difficulty above their years." John Milton, "Of Education," 1644.

16. Emerson Journals, entry for September 14, 1839, in *The Heart of Emerson's Journals*, eds. Bliss and Perry (Boston: Houghton Mifflin, 1937).

17. Jeanne S. Chall, Vicki A. Jacobs, and Luke E. Baldwin, *The Reading Crisis: Why Poor Children Fall Behind* (Cambridge, Mass.: Harvard University Press, 1990).

18. Cunningham and Stanovich, "Early Reading Acquisition."

19. Here is a characteristic summary from a present-day inheritor of these ideas: "Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned and goal directed — the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task. Critical thinking also involves evaluating the thinking process — the reasoning that went into the conclusion we've arrived at the kinds of factors considered in making a decision. Critical thinking is sometimes called directed thinking because it focuses on a desired outcome." Diane F. Halpern, *Thought and Knowledge: An Introduction to Critical Thinking* (Mahwah, N.J.: Erlbaum, 1996).

20. For reviews of the scientific literature on these subjects, see E. D. Hirsch, *Cultural Literacy* (Boston: Houghton Mifflin, 1987); Hirsch, *The Schools We Need*; W. Schneider, J. Korkel, and F. E. Weinert, "Expert Knowledge, General Abilities, and Text Processing," in W. Schneider and F. E. Weinert, eds., *Interactions Among Aptitudes, Strategies, and Knowledge in Cognitive Performance* (New York: Springer-Verlag, 1990).

21. Linda Perlstein, "School Pushes Reading, Writing Reform; Sciences Shelved to Boost Students to 'No Child' Standard," *Washington Post*, 31 May 2004, p. A1.

22. Max Planck, *Scientific Autobiography and Other Papers*, Frank Gaynor, trans. (London: Williams & Norgate, 1950): "A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die and a new generation grows up that is familiar with it."

23. Hideki Hiroishi, Akio Iwasaki, and Masahiko Oe, *Comparative Study of Cross-Cultural Understanding: Japan and the United States: Cultural Traits and Curriculum as Crucial Agents*, http://www.cck.dendai.ac.jp/ _hiroishi/Report/en01.html: "We found a significant difference in the length of time students spend watching television. While the most American students watch TV 'one–two hours a day,' their Japanese counterparts responded that they watch TV 'more than three hours a day.' This tendency is more conspicuous among high schoolers. Whereas three quarters of Japanese high school students spend more than two hours a day watching TV, the largest high school viewing population was found among those students who watch TV thirty minutes to an hour a day in the U.S."

24. Richard Rothstein, *Class and Schools: Using Social, Economic, and Educational Reform to Close the Black-White Achievement Gap* (Washington, DC: Economic Policy Institute, 2004).

25. Among the many research reports on this subject, the following are notable: A. Garnham and J. Oakhill, "The Mental Models Theory of Language Comprehension," in B. K. Britton and A. C. Graesser, eds., *Models of Understanding Text* (Hillsdale, N.J.: Erlbaum, 1996); Arthur C. Graesser and Rolf A. Zwaan, "Inference Generation and the Construction of Situation Models," in Charles A. Weaver III, Suzanne Mannes, and Charles R. Fletcher, eds., *Discourse Comprehension: Essays in Honor of Walter Kintsch* (Hillsdale, N.J.: Erlbaum, 1995), 117–39; Walter Kintsch, *Comprehension: A Paradigm for Cognition* (New York: Cambridge University Press, 1998); H. van Oostendorp and S. R. Goldman, eds., *The Construction of Mental Representations During Reading* (Mahwah, N.J.: Erlbaum, 1999); Rolf A. Zwaan and Gabriel A. Radvansky, "Situation Models in Language Comprehension and Memory," *Psychological Bulletin 123*, 2 (March 1998): 162–85.

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